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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/653,921	09/04/2003	Gary R. Pickrell	01640334AA	3781
30743	7590	06/16/2006	EXAMINER	
WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C. 11491 SUNSET HILLS ROAD SUITE 340 RESTON, VA 20190			CHIEM, DINH D	
			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 06/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/653,921

Applicant(s)

PICKRELL ET AL.

Examiner

Erin D. Chiem

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 March 2006.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-14 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

This office action is in response to the Request for Continued Examination. Upon further search and reconsideration, examiner found prior arts that read onto the new interpretation of the claimed limitations. A new ground of rejection is provided herein below.

#### *Claim Rejections - 35 USC § 102*

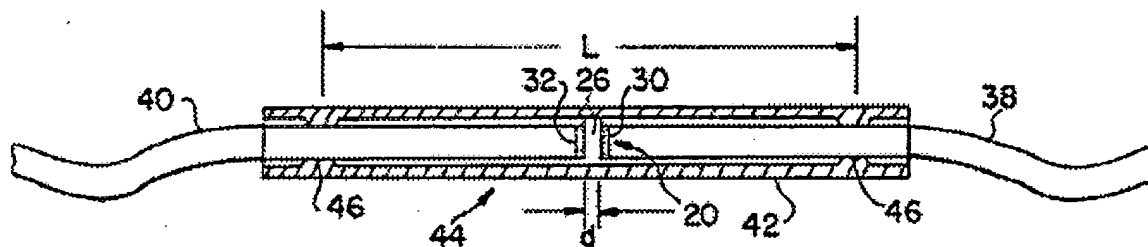
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4, 8, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Belleville et al. (US 5,392,117 “Belleville” hereinafter).

Regarding claims 1 and 8, in Fig. 3 Belleville discloses a fiber optic sensor comprising a body of crystalline material, quartz (42), a fiber optic element having an end surface (20), said fiber optic element being bonded to said body of crystalline material (col. 6, lines 25-27), and a reflective surface (32) positioned by said body of crystalline material at a location separated from said end surface of said fiber optic element to form a gap ('d') which varies in length in response to a condition of interest (col. 6, lines 40-42).



Regarding the limitation which recites:

...the body of crystalline material being resistant to persistent dimensional changes in response to stress applied thereto for an extended period,

...whereby said sensor is resistant to measurement drift under conditions of stress applied to said sensor for an extended period.

These limitations are not given patentable weight since these limitations are claimed in functional language that does not provide further structural limitation that performs the function. Thus, Belleville anticipates these functional limitations by anticipating all of the positively claimed structural limitations of claims 1 and 8.

Claims 4 and 11, the microcapillary (42) is a tube.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 3, 7, 9, 10, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belleville in view of Wang (US 5,963,321 “Wang” hereinafter) .

Belleville discloses the invention of claims 1 and 8, however, Belleville does not disclose the coefficient of thermal expansion (CTE) of the crystalline material is matched to a CTE of the fiber optic element. Furthermore, Belleville does not disclose having a maximized CTE difference between the crystalline material and the fiber.

Wang teaches a self-calibrating optical pressure and temperature sensor wherein the application of the sensor is dependent on the matching or differing of the CTE of the fiber optic element and the sleeve, or more generally known as the body in the present application. By matching the CTE of the fiber optic element and the body, the sensor may be used as a pressure sensor. Conversely, by maximizing the CTE difference between the fiber optic element and the body, the sensor is used for measuring temperature (col. 8, lines 58-67 and col. 9, lines 14-28).

Since Belleville and Wang are both from the same field of endeavor, the purpose disclosed by Wang would have been recognized in the pertinent art of Belleville.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to match or differs the CTE of the optical fiber and the body during manufacturing process. **The motivation** for matching or differing the CTE of the fiber optic element and the body is to compensate the two dependent parameters, temperature and pressure, such that the desired parameter, temperature and pressure, is isolated.

Claims 5-7, and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belleville in view of Jacobs-Cook (US 5,569,856 “Jacobs” hereinafter).

It would have been obvious to one having ordinary skill at the time of the invention to recognize Belleville's invention and Jacobs-Cook's invention both utilize the Fabry-Perot method of sensing pressure and strain wherein the difference of embodiments, tube embodiment

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of Belleville and planar substrate having a groove embodiment of Jacobs-Cook, are obvious modification to one having ordinary skill in the art. **The motivation** for having two different structural embodiment is for utilizing the sensor in different environment wherein the shape of the sensor is important to what application the sensor may be used. Furthermore, monocrystalline is the preferable material for the body of the sensor due to monocrystalline temperature tolerance.

***Response to Arguments***

Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin D. Chiem whose telephone number is (571) 272-3102. The examiner can normally be reached on Monday - Thursday 9AM - 5PM.

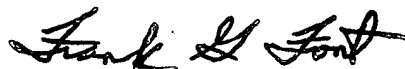
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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Art Unit 2883



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